

REMARKS

The Office has required restriction in the present application as follows:

- Group I: Claims 1-4, drawn to process of producing an *Aspergillus niger* strain;
- Group II: Claim 5, drawn to an enzymatic preparation; and
- Group III: Claims 6-10, drawn to a method of making a free ferulic acid using either an *Aspergillus* strain or an enzyme composition.

Restriction is only proper if the claims of the restricted groups are either independent or patentably distinct. The burden of proof is on the Office to provide reasons and/or examples to support any conclusion with regard to patentable distinctness. MPEP §803.

Applicants respectfully traverse the requirement for restriction on the grounds that the Office has not provided adequate reasons and/or examples to support a conclusion of patentable distinctness between the identified groups.

The Examiner, citing PCT Rule 13.1 and 13.2, contends that Groups I-III do not relate to a single general inventive concept because they lack the same or corresponding special technical features. However, Applicants traverse the Restriction Requirement on the grounds that the Office has not applied the same standard of unity of invention as the International Preliminary Examination Authority. The Authority did not take the position that unity of invention was lacking in the International application and examined all claims together (see the International Preliminary Examination Report appended herewith). Applicants note that PCT Article 27(1) states that no national law shall require compliance with requirements relating to the form and contents of the International application different from or additional to those which are provided for in the Patent Cooperation Treaty and the Regulations.

In fact, Applicants point to Section V of the International Preliminary Examination Report, in which the International Authority found the present invention to possess novelty, as well as inventive step.

In addition, the Office states that “PCT Rule 13.2 does not provide for multiple methods or products in one category”. The Office is literally correct. However, Applicants note that PCT Rule 13.2 is completely *silent* in regard multiple methods or products, and therefore does not exclude them, as suggested by the Office.

Furthermore, Applicants respectfully submit that the Office has mischaracterized the invention of Group I. Claims 1-4 of Group I are not drawn to a process of making strains of *Aspergillus niger*, as suggested by the Office, but to a process of making cultures of *Aspergillus niger* with a broad spectrum of enzymatic activity. Moreover, contrary to the Office’s assertions, Kroon does not describe the enzymatic composition of Claim 5, because Kroon describes enzymes that were obtained from separate cultures, not the same culture. Furthermore, the enzymatic preparations of Kroon comprise only one ferulate esterase and one or two enzymes which degrade the parietal polysaccharides (see Kroon at page 263 and 264, section headed “Source of Biological Materials”). In contrast, the preparations of Claim 5 of the present application are complex mixtures of many enzymes which degrade parietal polysaccharides, and comprise several ferulate esterases (see Examples 1, 2, and 4 at pages 7-14, 16, and 17 of the present specification). Thus, the preparations of Kroon are quite different from those of Claim 5.

Applicants make no statement in regard to the patentable distinctness of the restricted groups, but respectfully submit that the broad spectrum of enzymatic activity provided by the process of Claims 1-4 are present in the enzymatic preparations of Group II, and in the process of Group III, and therefore establish unity of invention between the restricted groups.

Thus, Applicants respectfully submit that the Office’s assertions regarding the restricted groups are factually incorrect. Furthermore, as discussed above, Applicants respectfully disagree that the restricted groups lack unity of invention in view of Kroon. In this regard, the International Preliminary Examination Report is in agreement.

Moreover, MPEP §803 states as follows:

“If the search and examination of an entire application can be made without a serious burden, the Examiner must examine it on the merits, even though it includes claims to distinct or independent inventions.”

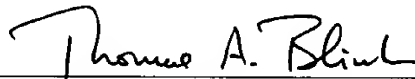
Applicants respectfully submit that a search of all the claims would not impose a serious burden on the Office.

Accordingly, and for the reasons presented above, Applicants submit that the Office has failed to meet the burden necessary in order to sustain the requirement for restriction. Applicants therefore request that the requirement for restriction be withdrawn.

Applicants respectfully submit that the above-identified application is now in condition for examination on the merits, and early notice thereof is earnestly solicited.

Respectfully submitted,

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference MJPcb539/90	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FR00/00966	International filing date (day/month/year) 14 April 2000 (14.04.00)	Priority date (day/month/year) 14 April 1999 (14.04.99)
International Patent Classification (IPC) or national classification and IPC C12N 1/14		
Applicant INSTITUT NATIONAL DE LA RECHERCHE AGRONOMIQUE (INRA)		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.  <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of <u>3</u> sheets.
3. This report contains indications relating to the following items:  I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 25 October 2000 (25.10.00)	Date of completion of this report 06 July 2001 (06.07.2001)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FR00/00966

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages \_\_\_\_\_ 1-24 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_ 1-11 \_\_\_\_\_, filed with the letter of \_\_\_\_\_ 07 May 2001 (07.05.2001)
- ☒ the drawings:  
pages \_\_\_\_\_ 1/3-3/3 \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/FR 00/00966**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	1-4, 8-11	YES
	Claims	5-7	NO
Inventive step (IS)	Claims	1-4	YES
	Claims	5-11	NO
Industrial applicability (IA)	Claims	1-11	YES
	Claims		NO

## 2. Citations and explanations

Reference is made to the following documents:

- D1: KROON P A ET AL: 'RELEASE OF FERULIC ACID FROM SUGAR-BEET PULP BY USING ARABINANASE, ARABINOFURANOSIDASE AND AN ESTERASE FROM ASPERGILLUS NIGER' BIOTECHNOLOGY AND APPLIED BIOCHEMISTRY, US, ACADEMIC PRESS, vol.23, no.3, 1996, pages 263-267 XP000603360 ISSN:0885-4513
- D2: MICARD V ET AL: 'STUDIES ON ENZYMIC RELEASE OF FERULIC ACID FROM SUGAR-BEET PULP' LEBENSMITTEL WISSENSCHAFT UND TECHNOLOGIE, GB, LONDON, vol.27, no.1, 1994, pages 59-66 XP000603509
- D3: LESAGE-MEESSEN L ET AL: 'Fungal transformation of ferulic acid from sugar beet pulp to natural vanillin' JOURNAL OF THE SCIENCE OF FOOD AND AGRICULTURE, vol.79, March 1999 (1999-03), pages 487-490, XP002124793 ELSEVIER APPLIED SCIENCE PUBLISHERS. BARKING., GB ISSN:0022-5142

1. Document D1, which is considered to be the prior art closest to Claims 1-4, describes the purification of a ferulate esterase (CinnAE) from *Aspergillus niger* grown on beet pulp, and teaches that, to obtain an actual release of ferulic acid from beet pulp, said

ferulate esterase must be mixed with commercial enzymes capable of decomposing the parietal polysaccharides. D1 does not suggest, indeed to the contrary, that it would be possible to simultaneously induce, in a same culture of *A. niger*, the production of enzymes decomposing the parietal polysaccharides and ferulate esterases. The subject matter of Claims 1-4, which describe a method for obtaining cultures of *A. niger* having these two types of enzymatic activities, is therefore considered to be novel and inventive (PCT Article 33(2) and (3)).

2. 2.1 Document D1 describes an enzymatic preparation consisting of a mixture of ferulate esterase (CinnAE) and suitable commercial carbohydrases decomposing the parietal polysaccharides, likewise extracted from *A. niger*. This preparation, although it is not obtained simultaneously from a same culture of *A. niger*, deprives the subject matter of Claim 5 of novelty (PCT Article 33(2)).

2.2 D1 also describes an effective production of ferulic acid from oligosaccharides derived from beet pulp. Consequently, the subject matter of Claims 6-7 does not meet the PCT requirement of novelty insofar as said claims refer to bringing the substrate into contact with "at least one enzymatic preparation according to Claim 5". Said claim is not, however, novel (see preceding paragraph) (PCT Article 33(2)).

2.3 The additional features described in dependent Claims 8-9, relating to the concentration of ferulic acid in the *A. niger* culture medium, constitute obvious variations for a person skilled in the art,

and do not therefore involve an inventive step (PCT Article 33(3)).

2.4 The use of cereal bran as the feruloyl substrate in a method for producing ferulic acid does not involve an inventive step because the high content of ferulic acid in cereal bran is a feature well known for a person skilled in the art (see D2, introduction). The subject matter of dependent Claim 10 is not therefore inventive (PCT Article 33(3)).

2.5 Document D3 describes the biotransformation of ferulic acid purified from beet pulp into vanillic acid by *A. niger*. Adding this process appears to be an obvious possibility for a person skilled in the art, and the presence of an inventive step in dependent Claim 11 cannot therefore be established.